Studybeesofficial
EDUCATIONAL PLATFORM
www.studybeesofficial.com

HSSC-I NATIONAL BOOK FOUNDATION FBISE

PHYSICS TEST - CHAPTER 11: CURRENT ELECTRICITY

Name:		Roll No.		Section:

Total Time: 2:30 Hour **Total Marks: 150**
Time Allowed: 150 Minutes

PAPER OBJECTIVE
SECTION-A (MARKS 150)

NOTE: Section-A is compulsory. All parts of this section are to be answered on these pages and handed over to the center superintendent. Deleting / overwriting is not allowed. Do not use lead pencil.

Q.1 Fill the relevant bubble for each part. All parts carry one mark.

Questions	A	B	C	D	A B C D
1. Electric current is the rate of flow of	mass	energy	voltage	charge	○○○●
2. Current I equals	Q^2/t	Q/t	Qt	t/Q	○●○○
3. SI unit of current is	ohm	volt	ampere	coulomb	○○●○
4. One ampere equals	one volt per ohm second	one watt per second	one joule per coulomb	one coulomb per second	○○○●
5. Current of 3 A for 10 s transfers charge	30 C	13 C	3.3 C	0.3 C	●○○○
6. Charge of 120 C passes in 60 s. Current is	7200 A	2 A	0.5 A	180 A	○●○○
7. Conventional current flows from	positive to negative terminal	nowhere	both ways	negative to positive	●○○○
8. Electrons in a wire move from	at light speed	positive to negative	negative to positive terminal	randomly only	○○●○
9. Current in a conductor is I =	A v/nq	n v q/A	n A q/v	n A v q	○○○●
10. In I = nAvq, n is the	number of charge carriers per unit volume	atoms in the wire	length	total charges	●○○○
11. In I = nAvq, v is the	acceleration	drift velocity	speed of light	thermal speed	○●○○
12. Drift velocity of electrons in a wire is	nearly speed of light	equal to thermal speed	zero	very small	○○○●
13. Typical drift speed in a copper wire is of the order of	mm s^{-1}	km s^{-1}	10^8 m s^{-1}	10^6 m s^{-1}	●○○○
14. A lamp lights instantly because the electric field spreads	slowly	at drift velocity	at nearly the speed of light	at sound speed	○○●○

Follow Studybeesofficial on Instagram, YouTube Channel & WhatsApp Channel — Link in Bio

Questions	A	B	C	D	A B C D
15. For constant current, drift velocity is inversely proportional to	voltage	length	resistance	cross-sectional area	○○○●
16. If wire area halves at constant current, drift velocity	quadruples	stays same	halves	doubles	○○○●
17. Drift velocity increases when the applied	wire is cooler only	electric field increases	field decreases	wire is longer	○●○○
18. Potential difference is the work done per unit	time	length	charge	mass	○○●○
19. SI unit of potential difference is	watt	ohm	ampere	volt	○○○●
20. One volt equals one	joule per coulomb	watt per ampere	coulomb per joule	joule per second	●○○○
21. V = W/Q: 60 J moves 5 C. Potential difference is	65 V	12 V	300 V	0.083 V	○●○○
22. EMF of a source is the	resistance	terminal voltage in use	current per second	energy supplied per unit charge	○○○●
23. EMF is measured in	watt	volt	newton	ampere	○●○○
24. Terminal voltage of a cell delivering current I is	E + Ir	E − Ir	E/Ir	Ir − E	○●○○
25. Internal resistance of a cell causes	no heating	zero current	gain of EMF	loss of terminal voltage	○○○●
26. EMF 12 V, r = 1 Ω, I = 2 A. Terminal voltage is	10 V	11 V	14 V	12 V	●○○○
27. EMF 6 V, internal resistance 0.5 Ω, external 5.5 Ω. Current is	6 A	1 A	12 A	0.5 A	○●○○
28. A cell's terminal voltage equals its EMF when current is	maximum	zero	large	one ampere	○●○○
29. Ohm's law states that at constant temperature	$V \propto I^2$	$V \propto 1/I$	$V \propto I$	V is constant	○○●○
30. Ohm's law gives R =	V^2/I	VI	V/I	I/V	○○●○
31. SI unit of resistance is	ampere	volt	siemens	ohm	○○○●

Follow Studybeesofficial on Instagram, YouTube Channel & WhatsApp Channel — Link in Bio

Questions	A	B	C	D	A B C D
32. Voltage 12 V, current 3 A. Resistance is	0.25 Ω	4 Ω	15 Ω	36 Ω	○●○○
33. Resistor of 20 Ω carries 0.5 A. Voltage is	0.025 V	40 V	10 V	20.5 V	○○●○
34. A device that obeys Ohm's law is	superconductor only	non-ohmic	semiconductor only	ohmic	○○○●
35. V–I graph of an ohmic conductor is	a parabola	a horizontal line	a straight line through origin	a curve	○○●○
36. Which is a non-ohmic device?	Constantan wire at constant T	Filament lamp	Copper wire at constant T	Metal resistor	○●○○
37. Resistance of a wire is R =	ρLA	LA/ρ	ρA/L	ρL/A	○○○●
38. Resistivity unit is	Ω m^{-1}	Ω	Ω m	S m	○○●○
39. Resistance doubles when the wire's length	doubles	is unchanged	quadruples	halves	●○○○
40. Resistance becomes four times when wire's diameter	halves	quadruples	doubles	is unchanged	●○○○
41. Resistance of a wire doubles if its area	quadruples	doubles	is unchanged	halves	○○○●
42. Same wire is stretched to double length (volume constant). Resistance becomes	half	double	same	four times	○○○●
43. Resistivity depends on	length	area	the material and temperature	shape	○○●○
44. Wire of 2 m, area 1 mm^2 and ρ = 1.7 × 10^{-8} Ω m has resistance	3.4 Ω	0.0085 Ω	0.34 Ω	0.034 Ω	○○○●
45. Resistivity of metals with rise in temperature	increases	decreases	stays same	becomes zero	●○○○
46. Resistance of a metal conductor with temperature	stays same	increases	is zero	decreases	○●○○
47. Resistance of a semiconductor with temperature	increases	stays same	decreases	becomes infinite	○○●○
48. Temperature coefficient of resistance of metals is	positive	infinite	zero	negative	●○○○

Follow Studybeesofficial on Instagram, YouTube Channel & WhatsApp Channel — Link in Bio

Questions	A	B	C	D	A B C D
49. Resistance at temperature T is R =	$R_0 - \alpha\Delta T$	$R_0(1 + \alpha\Delta T)$	$R_0/(1 + \alpha\Delta T)$	$R_0\,\alpha\Delta T$	○●○○
50. A thermistor is a resistor whose resistance	depends on length	changes strongly with temperature	never changes	is constant	○●○○
51. Negative-temperature-coefficient thermistor resistance	increases as temperature rises	is zero	decreases as temperature rises	stays same	○○●○
52. Thermistors are used as	capacitors	temperature sensors	batteries	transformers	○●○○
53. Carbon fibre in concrete bridges is used to	add colour	reduce weight only	generate power	sense strain by resistance	○○○●
54. Conductor, insulator and semiconductor differ mainly in	density only	size	colour	number of free charge carriers	○○○●
55. Resistivity of an insulator is	zero	negative	very low	very high	○○○●
56. Electric power is	work × time	work per unit time	charge × time	force × distance	○●○○
57. Power in terms of V and I is	V/I	V + I	VI	I/V	○○●○
58. Power in terms of I and R is	R/I^2	I^2R	IR^2	I/R^2	○●○○
59. Power in terms of V and R is	VR^2	V^2/R	R/V^2	V/R^2	○●○○
60. SI unit of power is	watt	volt	ampere	joule	●○○○
61. A 60 W bulb at 240 V draws current	4 A	0.25 A	180 A	14 400 A	○●○○
62. A 100 W bulb at 200 V has resistance	200 Ω	20 000 Ω	400 Ω	0.5 Ω	○○●○
63. A 10 Ω resistor carries 2 A. Power dissipated is	40 W	20 W	5 W	100 W	●○○○
64. A 12 V supply across 6 Ω gives power	72 W	2 W	24 W	0.5 W	○○●○
65. If voltage across a resistor doubles, power becomes	four times	double	same	half	●○○○

Follow Studybeesofficial on Instagram, YouTube Channel & WhatsApp Channel — Link in Bio

Questions	A	B	C	D	A B C D
66. If current through a resistor is halved, power becomes	double	half	one quarter	same	○○●○
67. Electrical energy used is	Pt	P + t	t/P	P/t	●○○○
68. One kilowatt-hour equals	3.6×10^3 J	6×10^4 J	3.6×10^6 J	1000 J	○○●○
69. A 2 kW heater runs for 3 h. Energy used is	0.67 kWh	5 kWh	6 kWh	1.5 kWh	○○●○
70. A 100 W bulb for 10 hours uses	1 kWh	100 kWh	10 kWh	0.1 kWh	●○○○
71. Heating effect of current is due to	magnetism	light	gravity	collisions of electrons with lattice ions	○○○●
72. Heat produced in a resistor is H =	IR^2t	IRt^2	I^2R/t	I^2Rt	○○○●
73. Fuse wire has	low melting point	high melting point	high conductivity only	zero resistance	●○○○
74. Resistors in series have the same	power	voltage	current	resistance	○○●○
75. Resistors in parallel have the same	current	power	resistance	voltage	○○○●
76. Equivalent resistance in series is	$R_1 - R_2$	$R_1 + R_2$	R_1R_2	$1/R_1 + 1/R_2$	○●○○
77. Equivalent resistance in parallel satisfies	$R = R_1 + R_2$	$1/R = 1/R_1 + 1/R_2$	$R = R_1R_2$	$R = R_1 - R_2$	○●○○
78. 3 Ω and 6 Ω in series give	2 Ω	3 Ω	9 Ω	18 Ω	○○●○
79. 3 Ω and 6 Ω in parallel give	4.5 Ω	2 Ω	18 Ω	9 Ω	○●○○
80. Two 10 Ω resistors in parallel give	5 Ω	10 Ω	2.5 Ω	20 Ω	●○○○
81. Three 12 Ω resistors in parallel give	36 Ω	4 Ω	3 Ω	12 Ω	○●○○
82. Adding a resistor in parallel makes total resistance	stay same	double	decrease	increase	○○●○

Follow Studybeesofficial on Instagram, YouTube Channel & WhatsApp Channel — Link in Bio

Questions	A	B	C	D	A B C D
83. Adding a resistor in series makes total resistance	decrease	increase	stay same	halve	○●○○
84. Total resistance of parallel resistors is	their sum	greater than the largest	less than the smallest	equal to the largest	○○●○
85. Voltage divides in proportion to resistance in	neither	series	parallel	both equally	○●○○
86. Current divides in inverse proportion to resistance in	neither	both equally	series	parallel	○○○●
87. Two resistors 4 Ω and 12 Ω are in series across 32 V. Current is	8 A	2 A	0.5 A	4 A	○●○○
88. Kirchhoff's first law is about	junction currents	resistivity	loop voltages	power	●○○○
89. Kirchhoff's first law states that the sum of currents at a junction is	maximum	infinite	zero	doubled	○○●○
90. Kirchhoff's first law follows from conservation of	charge	energy	momentum	mass	●○○○
91. Kirchhoff's second law states that sum of EMFs around a loop equals sum of	resistances	potential drops	currents	powers	○●○○
92. Kirchhoff's second law follows from conservation of	momentum	energy	mass	charge	○●○○
93. Currents of 3 A and 2 A enter a junction. Current leaving is	0 A	1 A	6 A	5 A	○○○●
94. At a junction, 7 A enters and 4 A leaves in one wire. Other wire carries	3 A	11 A	1.75 A	28 A	●○○○
95. Sign convention: current entering a junction is taken as	positive	negative	zero	double	●○○○
96. Wheatstone bridge is balanced when the galvanometer shows	maximum deflection	zero deflection	negative deflection	full-scale	○●○○
97. Balanced Wheatstone bridge satisfies	P + Q = R + S	PQ = R/S	P − Q = R − S	P/Q = R/S	○○○●
98. Wheatstone bridge is used to measure	EMF	current only	unknown resistance	power	○○●○
99. Null method means measurement made at	maximum voltage	maximum current	zero current in the galvanometer	constant power	○○●○

Follow Studybeesofficial on Instagram, YouTube Channel & WhatsApp Channel — Link in Bio

Questions	A	B	C	D	A B C D
100. A potentiometer is used to	measure current	store charge	compare or measure EMF	measure power	○○●○
101. A potentiometer draws no current at balance, so it measures	resistance	power	terminal voltage under load	true EMF	○○○●
102. Advantage of a potentiometer over a voltmeter is that it draws	more power	no current at balance	only AC	maximum current	○●○○
103. In a potentiometer, balance length is proportional to	EMF	resistance of the cell	colour	internal resistance only	●○○○
104. An ammeter is connected in	series	open circuit	parallel	across the cell	●○○○
105. A voltmeter is connected in	parallel	in an open loop	series	in a short circuit	●○○○
106. An ideal ammeter has	infinite resistance	1 Ω resistance	100 Ω resistance	zero resistance	○○○●
107. An ideal voltmeter has	infinite resistance	zero resistance	1 Ω resistance	100 Ω resistance	●○○○
108. A galvanometer detects	large powers	heat	small currents	pressure	○○●○
109. Conductivity is the reciprocal of	resistance	resistivity	current	power	○●○○
110. SI unit of conductance is	siemens	ohm	volt	watt	●○○○
111. Superconductors have resistance	infinite	negative	very high	zero	○○○●
112. Free electrons in a metal move randomly with	thermal speed	light speed	no speed	drift velocity only	●○○○
113. Average drift of electrons arises due to	applied electric field	thermal energy only	gravity	magnetism	●○○○
114. Mobility of charge carriers is drift velocity per unit	charge	area	electric field	current	○○●○
115. Rheostat is a	battery	transformer	variable resistor	fixed capacitor	○○●○
116. Resistance of a 1 km, 1 mm² wire ($\rho = 1.7 \times 10^{-8}$ Ω m) is	170 Ω	0.017 Ω	17 Ω	1.7 Ω	○○●○

Follow Studybeesofficial on Instagram, YouTube Channel & WhatsApp Channel — Link in Bio

Questions	A	B	C	D	A B C D
117. Brightness of a bulb depends on	the wire length only	power dissipated	its colour	its size only	○●○○
118. Two bulbs, 40 W and 100 W at same voltage. Brighter is	neither	100 W	40 W	both equal	○●○○
119. Higher-wattage bulb at same voltage has	same resistance	infinite resistance	higher resistance	lower resistance	○○○●
120. Household appliances are connected in	parallel	both	neither	series	●○○○
121. A battery of EMF E and r connected to R delivers maximum power when R equals	2r	zero	r/2	r	○○○●
122. Cells in series have total EMF equal to	product	one EMF only	sum of EMFs	average EMF	○○●○
123. Identical cells in parallel give EMF equal to	one cell's EMF	product	zero	sum	●○○○
124. Electric charge flow needs a closed	circuit	wire only	magnet	insulator	●○○○
125. A short circuit has very	high resistance	low resistance	zero current	high voltage always	○●○○
126. Charge carriers in electrolytes are	only protons	only electrons	ions	neutrons	○○●○
127. Charge carriers in metals are	free electrons	protons	ions	neutrons	●○○○
128. Charge carriers in semiconductors are	neutrons	protons	ions only	electrons and holes	○○○●
129. Voltage drop across a 5 Ω resistor carrying 2 A is	7 V	10 V	0.4 V	2.5 V	○●○○
130. Resistor of 100 Ω dissipates 4 W. Current is	0.04 A	0.2 A	0.4 A	5 A	○●○○
131. Fraction of current through 2 Ω in parallel with 6 Ω is	1/2	1/4	3/4	1/8	○○●○
132. Current in a wire doubles when the potential difference across it	doubles	halves	is unchanged	quadruples	●○○○
133. A wire carries 0.5 A for 2 minutes. Charge passed is	240 C	60 C	1 C	0.25 C	○●○○

Questions	A	B	C	D	A B C D
134. Drift velocity depends on the number density of carriers n as	v is independent of n	$v \propto n$	$v \propto n^2$	$v \propto 1/n$	○○○●
135. Resistance of a copper wire at 0 °C is 10 Ω. Its resistance at higher temperature is	less than 10 Ω	zero	greater than 10 Ω	10 Ω	○○●○
136. Slope of a V–I graph gives	power	resistivity	charge	resistance	○○○●
137. Slope of an I–V graph gives	resistance	EMF	conductance	power	○○●○
138. In a series circuit, if one bulb fuses, the others	remain on	get warmer	become brighter	go off	○○○●
139. In a parallel circuit, if one bulb fuses, the others	dim	go off	explode	stay on	○○○●
140. A 6 V battery with three identical bulbs in series gives each bulb	1 V	2 V	6 V	18 V	○●○○
141. Power delivered by a source of EMF E and current I is	EI	E + I	I/E	E/I	●○○○
142. Power wasted as heat in internal resistance is	I^2r	I/r	Er	Ir^2	●○○○
143. Cost of electricity is billed in	kilowatt-hours	amperes	volts	watts	●○○○
144. A fuse is connected in	parallel with the appliance	across the supply only	series with the appliance	in neither	○○●○
145. Equipotential wire of uniform cross-section has potential drop proportional to its	mass	density	colour	length	○○○●
146. Constantan and manganin are used for resistors because their resistivity changes	to infinity	to zero	greatly with temperature	very little with temperature	○○○●
147. A thick wire carries current with less heating because its resistance is	larger	infinite	zero	smaller	○○○●
148. Electrons collide with ions of the lattice, causing	magnetism	superconductivity	resistance	radiation	○○●○
149. The unit of resistivity multiplied by length divided by area gives	ohm	volt	watt	siemens	●○○○
150. Ratio of power at 220 V to power at 110 V for the same resistor is	4	1/2	2	1/4	●○○○

Follow Studybeesofficial on Instagram, YouTube Channel & WhatsApp Channel — Link in Bio